

respectfully submitted that any such selective deposition would correspond to deposition of a "third" layer, because the examiner's proposed process would require deposition and selective removal, i.e., etching, of a second layer (as recited in the claims of Group II) in order to selectively deposit the "third" layer. That is, claim 22 reads on the very process thought to show that a device of Group I can be made by a materially different process. It is not apparent there exists any process to make the product of Group I, which differs materially from the process of Group II. For this reason the restriction requirement is believed to be in error and removal is requested.

Objection to the Drawings and Claims 7 and 8

The examiner raised two objections to the drawings which have now been overcome by the above amendments to the specification. These amendments render it unnecessary to submit corrections to the drawings.

Claim 7 was objected to for lacking a period. This error is now corrected. Claim 8 was objected to based on a grammatical matter which is not apparent to the undersigned. At lines 4 and 5, the claim references a position between the "first upper level" and "a first of the additional levels". The recited "first of the additional levels" is a first in the "plurality of additional upper levels" recited in line two of the claim. Since the only additional levels recited in claim 1 and claim 8 are the "additional upper levels" it is believed that the claim is clear and satisfies the requirements of Section 112. Removal of the objection is requested.

Rejection of Claims 20 and 21 Based on Enablement

Claims 20 and 21 were rejected under Section 112 as containing subject matter not described in the specification in such a way as to enable one to make or use the invention.

Claim 21 was rejected on this basis because of the language:

“said insulative material comprising a continuous layer extending from within regions between members of the upper level of interconnect to within regions between members of the lower level of interconnect ...”

Claim 21 was rejected on this basis because the recited structure is “so unclear as to enable one of ordinary skill in the art to clearly understand the claimed invention.”

Reconsideration is requested for the following reasons. It is respectfully submitted that the cited language of claim 21 clearly defines structural features of an example embodiment, which features are apparent from a reading of the detailed description in conjunction with the drawings. See pages 5 and 7 of the detailed description, as well as the Figures 1a, 1b and 3. Note that the view of Figure 1a is taken along a first plane orthogonal to the semiconductor surface 120 in order to illustrate multiple levels of interconnect sequentially formed in alternating directions. Figure 1b provides a different partial cross sectional view of the same structure 110, taken along a second plane orthogonal to the semiconductor surface 120 and parallel to the first plane. Figures 1a and 1b illustrate the structure 110 at an intermediate phase of fabrication. Figure 3 illustrates the same structure, according to the view of Figure 1b, after additional fabrication according to the invention.

As discussed at page 7, beginning with line 26, Figure 3 illustrates the circuit structure 110 in partial cross sectional view along the same plane as the view of Figure 1b. First, note that a conductive member 200 of each interconnect level 160 and 180, although not residing in the plane, is illustrated with phantom lines in Figure 3. These are noted as 200-M160 and 200-M180.

The phantom line representation is provided in this figure to assure that the claimed subject matter is clearly understood from a reading of the specification.

A low k dielectric layer 250 fills the previously etched voids, extending from the oxide layer 140a to between the conductive members 200 of interconnect level 180 and

generally overlying the level 180. With this understanding of Figure 3, it is clear that the layer 250 corresponds to

“... a continuous layer extending from within regions between members of the upper level of interconnect to within regions between members of the lower level of interconnect ...”

It is also clear that the layer 250 extends “between individual members of the upper level and individual members of the lower level” as recited in claim 21. Specifically, note that the insulative dielectric layer 250 is shown to continuously extend downward from the oxide layer 270, between the members 200 of level 180, e.g., in the plane of Figure 3, below the level 180 and between the members 200 of level 170. Thus there is a continuous layer 250 extending between the members 200 of level 180 to between members 200 of the next lower level 170 of interconnect.

If the examiner continues to believe there reason to sustain a rejection based on enablement, the examiner is requested to telephone the undersigned in order to more specifically describe any remaining concerns.

Other Rejections of the Claims Under Section 112

Claims 1 and 11 were rejected under Section 112 “because “low and high do not specifically describe a material or any property attributed to it, which in turn renders the scope of the claims unascertainable.” Applicants disagree with this rejection and request reconsideration for the following reasons.

The phrases “low dielectric constant” and “high dielectric constant” reflect proper use of relative terms in the claims. First, note that each term is used with reference to the other. Second, the term “low dielectric constant” is expressly defined in the application relative to silicon dioxide. See, for example, page 1, lines 20 to 35 and page 2, lines 1 to 30. Since the relevant terms are defined in the specification and claims, there is a standard for ascertaining the scope of the claims with sufficient definition to satisfy the

provisions of Section 112. See MPEP 706.03(d). Note, specifically, par. 7.43.03, which sets a standard for indefiniteness. See also MPEP 2173.05. In view of the foregoing, it is clear that a standard is disclosed to render the claims 1 and 11 definite and that the scope of these claims will be understood by one of ordinary skill.

Claim 1 is amended to provide antecedent basis for "an electronic device".

Claim 5 is amended to recite a "second insulative material" in line 2. There is now correct antecedent basis.

Claims 10, 20 and 21 are rejected under Section 112 based on use of the term "continuous." The rejection stated that it is unclear how the associated layer is continuous. However, it is now submitted, in view of the above discussion (regarding enablement of claims 20 and 21), that use of the word "continuous" (according to the plain meaning of "continuous") indeed does describe how the layer extends from between conductive members. Removal of the rejection is therefore requested. If the examiner prefers to propose other claim language to describe the invention, the applicants will appreciate this. Nonetheless, allowance of the claims as now presented is appropriate.

Rejections Under Section 102

Claims 1 – 21 have been rejected under Section 102 based on Jeng '111. With reference to Figure 3, as well as the above discussion (regarding enablement of claims 20 and 21), it is submitted that the rejections are in error. All of applicant's claims are distinct and non-obvious over Jeng, alone or in combination with the other art of record. Applicants maintain that the claims are allowable because Jeng does not teach or suggest

"a first insulative material, having a relatively low dielectric constant, positioned to electrically isolate members of the first upper level from one another and extending to the lower level of interconnect members [see claim 1]"

Nor does Jeng teach or suggest an:

"insulative material comprising a continuous layer extending from within regions between members of the upper level of interconnect to within regions between members of the lower level of interconnect ... [claim 20]".

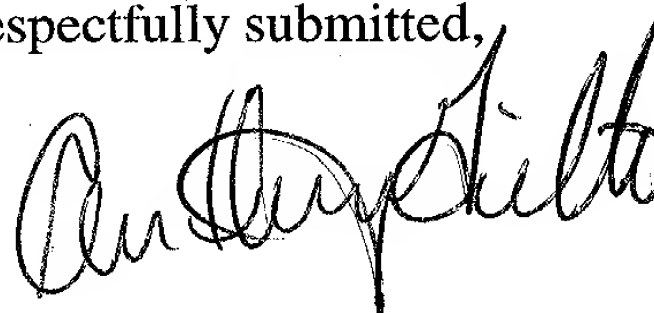
It is apparent from Figure 3 of Jeng that the layer 18 (referenced by the examiner) does not satisfy the structural requirements of applicants' claims. Note, this is precluded by Jeng's intervening layer 22. The layer 22 is described at Col 4, line 31 as SiO₂.

CONCLUSION

It is also submitted that each of the claims depending from claim 1 or claim 20 further distinguishes the invention over the art of record.

For all of the above reasons, it is respectfully submitted that all of the examined claims are now in condition for allowance and allowance is requested. It is also submitted that examination of the restricted claims should be had in this examination. Upon finding allowability of those claims the application should be allowed.

Respectfully submitted,



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